

WHAT WE CLAIM IS:

1. A cellular mobile communications network in which a mobile station is capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of the base stations through a wireless channel, comprising:

a selection means for producing a measure of signal quality of the downlink signals from the plurality of base stations to the mobile station and for selecting a base station from which the downlink signal shows a preferred signal quality;

a transmission means for transmitting the uplink signal indicating the selected base station among the plurality of base stations for subsequent communication with the mobile station; and

a processing means for processing the uplink signal to identify the selected base station, from among the plurality of base stations.

2. The network as claimed in claim 1, wherein said mobile station includes said selection means and said transmission means.

3. The network as claimed in claim 2, wherein said transmission means is operable to include an identification of the selected base station in the uplink signal.

4. The network as claimed in claim 1, wherein each base station includes said processing means.

5. The network as claimed in claim 4, wherein said transmission means is operable to include an identification of the selected base station, in the uplink signal.

6. The network as claimed in claim 1, wherein the signal quality of the downlink signals from the plurality of base stations to the mobile station is represented by signal strengths of the received downlink signals.

7. A cellular mobile communications network, comprising:
a plurality of base stations each being capable of transmitting a downlink signal to a mobile station and receiving an uplink signal from the mobile station through a wireless channel, each base station including:

a processing unit for identifying a selected base

station among the plurality of base stations upon receiving from the mobile station an uplink signal indicating the selected base station from which the downlink signal shows a preferred signal quality; the network further comprising a base station controller connected to the plurality of base stations for delivering the downlink signals thereto for further transmission by said base stations.

8. A network as claimed in claim 7, wherein the signal quality of the downlink signals from the plurality of base stations to the mobile station is represented by signal strengths of the received downlink signals.

9. A cellular mobile communications network, comprising:
a plurality of base stations each of which is capable of transmitting a downlink signal to a mobile station and receiving an uplink signal from the mobile station through a wireless channel, each base station including:

a processing unit for identifying a selected base station, among the plurality of base stations upon receiving from the mobile station the uplink signal indicating the selected base station, for subsequent

communication with the mobile station, from which the downlink signal shows a preferred signal quality.

10. The network as claimed in claim 9, further comprising a base station controller operatively connected to the plurality of base stations for delivering the downlink signals thereto for further transmission by the selected base station.

11. The network as claimed in claim 9, wherein the signal quality of the downlink signals from the plurality of base stations to the mobile station is represented by signal strengths of the received downlink signals.

12. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, comprising:

a selection processing means for producing a measure of a signal quality of the downlink signals from the plurality of base stations, and selecting a base station from which the downlink signal shows a preferred signal quality; and,

a transmission means for transmitting the uplink signal indicating the selected base station among the plurality of base stations for subsequent communication with the mobile station.

13. The mobile station as claimed in claim 12, wherein said transmission means transmits the uplink signal including an identification of the selected base station among the plurality of base stations.

14. The mobile station as claimed in claim 12, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

15. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, comprising:

a selection processing unit for producing a measure of a signal quality of the downlink signals from the plurality of base stations, and selecting a base station from which the downlink signal shows the best signal quality; and

a transmitter unit for transmitting the uplink signal indicating the selected base station, among the plurality of base stations, for subsequent communication with the mobile station.

16. The mobile station as claimed in claim 15, wherein the transmitter unit transmits the uplink signal including an identification of a single selected base station among the plurality of base stations.

17. The mobile station as claimed in claim 15, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

18. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, comprising:

a processor which produces a measure of a signal quality of the downlink signals from the plurality of base stations, and selects a base station from which the downlink signal shows a preferred signal quality; and

a transmitter which transmits the uplink signal including an identification of the selected base station, from among the plurality of base stations, for subsequent communication with the mobile station.

19. The mobile station as claimed in claim 18, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

20. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, comprising:

a processor which produces a measure of signal quality of the downlink signals from the plurality of base stations, and selects a base station from which the downlink signal shows the best signal quality; and

a transmitter which transmits the uplink signal including an identification of the selected base station, among the plurality of base stations, for subsequent communication with the mobile station .

21. The mobile station as claimed in claim 20, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

22. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to each of the plurality of base stations through a wireless channel, comprising:

a processor which produces a measure of signal strengths of the downlink signals received from the plurality of base stations, and selects a base station from which a received downlink signal shows the highest signal strength; and

a transmitter which transmits the uplink signal including an identification of the selected base station, among the plurality of base stations, for subsequent communication with the mobile station .

23. A base station which supports a wireless channel for a mobile station together with one or more other base stations, comprising:

a transmitter which transmits a downlink signal to the

mobile station, the mobile station being capable of receiving downlink signals from the other base stations as well;

a receiver that receives an uplink signal from the mobile station; and

a controller that identifies if the base station is a selected base station upon the base station receiving, from the mobile station, an uplink signal indicating the selected base station for subsequent communication with the mobile station from which the downlink signal shows a preferred signal quality.

24. The base station as claimed in claim 23, wherein the uplink signal includes an identification of the selected base station.

25. The base station as claimed in claim 23, wherein the signal quality is represented by signal strengths of the downlink signals.

26. An electronics device for use in a mobile station, comprising:

a receiving means for receiving a downlink signal from

each of a plurality of base stations and transmitting an uplink signal;

a selection processing means for producing a measure of a signal quality of the downlink signals received from the plurality of base stations and selecting a base station from which a received downlink signal shows a preferred signal quality; and,

a transmitter means for transmitting, to the plurality of base stations, an uplink signal indicating the selected base station, among the plurality of base stations, for subsequent communication with the mobile station.

27. The electronics device as claimed in claim 26, further comprising:

a cell identification means for including, in the uplink signal, an identification of the selected base station from among the plurality of base stations.

28. The electronics device as claimed in claim 26, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

29. Control circuitry, for use in a mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of the base stations through a wireless channel, said control circuitry comprising:

a selection processing means which produces a measure of a signal quality of the downlink signals received from the plurality of base stations, and selects a base station from which a downlink signal shows preferred signal quality; and,

an output means which outputs a data indicating the selected base station, among the plurality of base stations, for subsequent communication with the mobile station,

wherein the data is included in the uplink signal.

30. The control circuitry as claimed in claim 29, wherein the uplink signal includes an identification of the selected base station among the plurality of base stations.

31. The control circuitry as claimed in claim 29, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal

strengths of the received downlink signals.

32. Signal processing circuitry, for use in a mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, said signal processing circuitry comprising:

a processor which produces a measure of a signal quality of the downlink signals received from the plurality of base stations, selects a base station from which a downlink signal shows a preferred signal quality, and controls transmission of the uplink signal to indicate the selected base station, among the plurality of base stations, for subsequent communication with the mobile station.

33. The signal processing circuitry as claimed in claim 32, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

34. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and

transmitting an uplink signal to the plurality of the base stations through a wireless channel, comprising:

a processor which produces a measure of a signal quality of the downlink signals from the plurality of base stations, selects a base station from which the downlink signal shows a preferred signal quality, and controls transmission of the uplink signal to include an identification of the selected base station, among the plurality of base stations, for subsequent communication with the mobile station.

35. The mobile station as claimed in claim 34, wherein the signal quality of the downlink signals from the plurality of base stations is represented by signal strengths of the received downlink signals.

36. A mobile station capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, comprising:

a processor which produces a measure of signal strengths of the downlink signals from the plurality of base stations, selects a base station from which the

downlink signal shows the highest signal strength, and controls transmission of the uplink signal to include an identification of the selected base station among the plurality of base stations for subsequent communication with the mobile station.

37. An electronics device for use in a base station which supports a wireless channel for a mobile station together with one or more of other base stations, comprising:

a transmission means for transmitting a downlink signal to the mobile station which is capable of receiving downlink signals from each of the other base stations as well;

a receiver means for receiving an uplink signal from the mobile station; and,

a control means for identifying if the base station is a selected base station upon the base station receiving, from the mobile station, an uplink signal indicating said selected base station for subsequent communication with the mobile station, said selected base station being determined based on a downlink signal therefrom having a preferred signal quality.

38. The electronics device as claimed in claim 37, wherein the signal quality is represented by signal strength of the downlink signals.

39. An electronics device for use in a base station which supports a wireless channel for a mobile station together with one or more other base stations, comprising:

a transmitter means which transmits a downlink signal to the mobile station, the mobile station being capable of receiving downlink signals from each of the other base stations as well;

a receiver means which receives from the mobile station an uplink signal indicating if the base station is a selected base station, said selected base station based on a measure of a signal quality of the downlink signals received at said mobile station.

40. The electronics device as claimed in claim 39, wherein the signal quality is represented by signal strengths of the downlink signal.

41. Control circuitry, for use in a base station which

transmits a downlink signal to a mobile station and receives an uplink signal from the mobile station through a wireless channel, said mobile station capable of receiving downlink signals from other base stations as well, said control circuitry comprising:

a controller to identify if the base station is a selected base station upon the base station receiving an uplink signal indicating the selected base station for a subsequent communication with the mobile station from which a downlink signal shows a preferred signal quality as received at the mobile station.

42. The control circuitry as claimed in claim 41, wherein the uplink signal includes an identification of the selected base station.

43. The control circuitry as claimed in claim 41, wherein the signal quality is represented by signal strengths of the downlink signal.

44. A method for a cellular mobile communications network, comprising the steps of:

receiving a downlink signal from each of a plurality

of base stations through a wireless channel;

measuring a signal quality of the downlink signals received from the plurality of base stations;

selecting, in dependence upon the measured signal quality, a base station for subsequent communication with a mobile station; and

transmitting an uplink signal, to the plurality of base stations through the wireless channels, indicating the selected base station, among the plurality of base stations.

45. The method as claimed in claim 44, further comprising the step of:

including, in the uplink signal transmitted to the plurality of base stations, an identification of the selected base station.

46. The method as claimed in claim 44, wherein the signal quality of the downlink signals from the plurality of base stations to the mobile station is represented by signal strengths of the received downlink signals.

47. A method for a cellular mobile communications network

in which a mobile station is capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of base stations through a wireless channel, comprising the steps of:

receiving, from the mobile station, an uplink signal indicating a selected base station from which the downlink signal shows a preferred signal quality; and

identifying the selected base station, among the plurality of base stations, for subsequent communication with the mobile station.

48. A cellular mobile communications network wherein

a mobile station is capable of receiving a downlink signal from each of a plurality of base stations and transmitting an uplink signal to the plurality of the base stations through a wireless channel,

the mobile station produces a measure of a signal quality of the downlink signals received from the plurality of base stations, and transmits an uplink signal indicating a selected base station for subsequent communication with the mobile station, said selected base station based on the measure of the signal quality of the downlink signal, and

each of the plurality of base stations receives, from the mobile station, the uplink signal, and identifies if each of the plurality of base stations is the selected base station.

49. The network as claimed in claim 48, wherein the mobile station transmits, to the plurality of base stations, the uplink signal including an identification of the selected base station.

50. The network as claimed in claim 48, wherein the signal quality of the downlink signals from the plurality of base stations to the mobile station is represented by signal strengths of the received downlink signals.

51. A cellular mobile communication network having a plurality of base stations, and a mobile station capable of receiving a downlink signal from each of said plurality of base stations and transmitting an uplink signal to the plurality of base stations, said cellular mobile communications network comprising:

a processor which monitors a predetermined signal characteristic of each downlink signal received at said

mobile station and compares predetermined signal characteristic of said downlink signals and selects a preferred base station, said processor including :

a message generator which generates a base station selection message which identifies the selected preferred base station;

a transmitter which transmits the base station selection message in the uplink signal; and

a controller for providing an identification to each base station in a soft hand-off mode with the mobile station.

52. The cellular mobile communication network of claim 51, wherein

said mobile station includes said processor.

53. The cellular mobile communication network of claim 51, wherein said transmitter transmits the identification of each base station in the uplink signal.

54. The cellular mobile communication network of claim 51, wherein said base station selection message identifies the selected preferred base station by said identification of

each base station.

55. The cellular mobile communication network of claim 54, further comprising:

a soft hand-off controller for receiving said base station selection message and comparing said identification of each base station with said selection message.

56. The cellular mobile communication network of claim 51, wherein the predetermined signal characteristic of the downlink signals from the plurality of base stations to the mobile station is represented by power levels of the received downlink signals. .

57. A mobile station of a cellular mobile communications network capable of receiving a downlink signal from each base station of a plurality of base stations and transmitting an uplink signal to the plurality of base stations, said mobile station comprising:

a transmitter which transmits the uplink signal to each base station of the plurality of base stations involved in a soft hand-off mode with said mobile station;

a receiver that receives the downlink signal from each

base station of a plurality of base stations; and

a controller for providing an identification to each base station involved in a soft hand-off mode with the mobile station.

58. The mobile station of claim 57, further comprising:

a message generator which generates an identification message which includes the identification of each base station, wherein said identification message is transmitted in the uplink signal.

59. The mobile station of claim 58, wherein the identification message is transmitted in a control channel of the uplink signal to said each base station of the plurality of base stations involved in a soft hand-off mode.

60. A mobile station of a cellular mobile communications network capable of receiving a downlink signal from each base station of a plurality of base stations and transmitting an uplink signal to the plurality of base stations, the plurality of base stations involved in a soft hand-off mode, said mobile station comprising:

a controller for providing an identification to each base station involved in the soft hand-off mode with the mobile station.

61. The mobile station of claim 60, further comprising:

a message generator which generates an identification message which includes the identification of each base station, said identification message transmitted in the uplink signal.

62. The mobile station of claim 61, wherein the identification message is transmitted in a control channel of the uplink signal to said each base station of the plurality of base stations involved in a soft hand-off mode.

63. An electronics device for use in a mobile station of a cellular mobile communications network, said mobile station comprising:

a transmitter which transmits an uplink signal to each base station of the plurality of base stations involved in a soft hand-off mode;

a receiver that receives the downlink signal from each

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base station of a plurality of base stations; and,

a controller for providing an identification to each base station involved in the soft hand-off mode with the mobile station.

64. An electronics device for use in a mobile station of a cellular mobile communications network capable of receiving a downlink signal from each base station of a plurality of base stations and transmitting an uplink signal to the plurality of base stations, the electronics device comprising:

a controller for providing an identification to each base station involved in a soft hand-off mode with the mobile station.

65. A cellular mobile communications network, comprising:

a plurality of base stations each being capable of transmitting a downlink signal to a mobile station and receiving an uplink signal from the mobile station through a wireless channel, each base station including:

a soft hand-off control unit for processing the uplink signal and determining from the uplink signal an identification of a preferred base station among from the

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plurality of base stations participating in a soft hand-off mode with the mobile station; and

a mobile station for receiving the downlink signal from each of said plurality of base stations and transmitting the uplink signal to said plurality of base stations, said mobile station including:

a controller for providing an identification to each base station involved in the soft hand-off mode with the mobile station.

66. The cellular mobile communications network of claim 65, wherein the mobile station comprises:

a downlink signal processing unit which processes the downlink signals and compares the downlink signals according to a transmission characteristic, and selects the preferred base station to transmit a subsequent downlink signal to said mobile station, said downlink signal processing unit generating a message specifying the preferred base station.

67. The cellular mobile communications network of claim 66, wherein said soft hand-off control unit further processes the uplink signals and determines said preferred

base station.

68. The cellular mobile communications network of claim 66, wherein

each of the plurality of base stations further comprises:

a switching unit for preventing the transmission of the subsequent downlink signal to the mobile station unless the base station is identified as the preferred base station.

69. The cellular mobile communications network of claim 66, wherein the transmission characteristic of the downlink signals from the plurality of base stations to the mobile station is represented by power levels of the received downlink signals.